

## SAFETY DATA SHEET

Creation Date 02-October-2012

Revision Date 28-December-2021

Revision Number 6

### 1. Identification

**Product Name** Tris (2-cyanoethyl)phosphine

**Cat No. :** AC449710000; AC449710010; AC449710100; AC449710500

**CAS-No** 4023-53-4

**Synonyms** No information available

**Recommended Use** Laboratory chemicals.

**Uses advised against** Food, drug, pesticide or biocidal product use.

#### Details of the supplier of the safety data sheet

##### Company

##### **Importer/Distributor**

Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

Acros Organics  
One Reagent Lane  
Fair Lawn, NJ 07410

##### **Manufacturer**

Fisher Scientific Company  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

**Emergency Telephone Number** For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No.**US**:001-800-424-9300 / **Europe**:001-703-527-3887

### 2. Hazard(s) identification

#### Classification

**WHMIS 2015 Classification** Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

<b>Acute oral toxicity</b>	Category 4
<b>Acute Inhalation Toxicity</b>	Category 3
<b>Skin Corrosion/Irritation</b>	Category 2
<b>Serious Eye Damage/Eye Irritation</b>	Category 2
<b>Carcinogenicity</b>	Category 1A
<b>Specific target organ toxicity (single exposure)</b>	Category 3
Target Organs - Respiratory system.	

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Harmful if swallowed  
 Toxic if inhaled  
 Causes skin irritation  
 Causes serious eye irritation  
 May cause respiratory irritation  
 May cause cancer



### Precautionary Statements

#### Prevention

Obtain special instructions before use  
 Do not handle until all safety precautions have been read and understood  
 Avoid breathing dust/fume/gas/mist/vapors/spray  
 Wash face, hands and any exposed skin thoroughly after handling  
 Do not eat, drink or smoke when using this product  
 Use only outdoors or in a well-ventilated area  
 Wear protective gloves/protective clothing/eye protection/face protection

#### Response

IF ON SKIN: Wash with plenty of soap and water  
 IF INHALED: Remove person to fresh air and keep comfortable for breathing  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 IF exposed or concerned: Get medical advice/attention  
 Call a POISON CENTER/ doctor  
 Rinse mouth  
 Take off contaminated clothing

#### Storage

Store locked up  
 Store in a well-ventilated place. Keep container tightly closed

#### Disposal

Dispose of contents/container to an approved waste disposal plant

## 3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Propanenitrile, 3,3,3-phosphinidynetris-	4023-53-4	95
Formaldehyde	50-00-0	0-0.1
Acrylonitrile	107-13-1	0-0.1

## 4. First-aid measures

#### General Advice

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

#### Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

#### Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

<b>Inhalation</b>	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
<b>Ingestion</b>	Do NOT induce vomiting. Call a physician or poison control center immediately.
<b>Most important symptoms/effects Notes to Physician</b>	None reasonably foreseeable. Treat symptomatically

## 5. Fire-fighting measures

<b>Suitable Extinguishing Media</b>	Water spray, carbon dioxide (CO <sub>2</sub> ), dry chemical, alcohol-resistant foam.
<b>Unsuitable Extinguishing Media</b>	No information available
<b>Flash Point</b>	No information available
<b>Method -</b>	No information available
<b>Autoignition Temperature</b>	No information available
<b>Explosion Limits</b>	
<b>Upper</b>	No data available
<b>Lower</b>	No data available
<b>Sensitivity to Mechanical Impact</b>	No information available
<b>Sensitivity to Static Discharge</b>	No information available

### Specific Hazards Arising from the Chemical

Keep product and empty container away from heat and sources of ignition.

### Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Nitrogen oxides (NO<sub>x</sub>). Oxides of phosphorus.

### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

### NFPA

<b>Health</b>	<b>Flammability</b>	<b>Instability</b>	<b>Physical hazards</b>
3	1	0	N/A

## 6. Accidental release measures

<b>Personal Precautions</b>	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
<b>Environmental Precautions</b>	Should not be released into the environment. See Section 12 for additional Ecological Information.
<b>Methods for Containment and Clean Up</b>	Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

## 7. Handling and storage

<b>Handling</b>	Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.
<b>Storage.</b>	Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Strong oxidizing agents. Acids.

## 8. Exposure controls / personal protection

### Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH IDLH
Formaldehyde	Ceiling: 1 ppm Ceiling: 1.3 mg/m <sup>3</sup> TWA: 0.75 ppm TWA: 0.9 mg/m <sup>3</sup>	TWA: 0.1 ppm STEL: 0.3 ppm	TWA: 0.1 ppm STEL: 1 ppm	Ceiling: 2 ppm Ceiling: 3 mg/m <sup>3</sup>	TWA: 0.1 ppm STEL: 0.3 ppm	(Vacated) TWA: 3 ppm (Vacated) STEL: 10 ppm (Vacated) Ceiling: 5 ppm TWA: 0.75 ppm STEL: 2 ppm	IDLH: 20 ppm TWA: 0.016 ppm Ceiling: 0.1 ppm
Acrylonitrile	TWA: 2 ppm TWA: 4.3 mg/m <sup>3</sup> Skin	TWA: 2 ppm Skin	TWA: 2 ppm CEV: 10 ppm Skin	TWA: 2 ppm TWA: 4.3 mg/m <sup>3</sup> Ceiling: 10 ppm Ceiling: 11 mg/m <sup>3</sup> Skin	TWA: 2 ppm Skin	(Vacated) TWA: 5 mg/m <sup>3</sup> Ceiling: 10 ppm TWA: 2 ppm	IDLH: 60 ppm IDLH: 25 mg/m <sup>3</sup> TWA: 1 ppm Ceiling: 10 ppm

#### Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

### Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

#### Eye Protection

Goggles

#### Hand Protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Nitrile rubber	See manufacturers recommendations	-	Splash protection only
Neoprene			
Natural rubber			
PVC			

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

#### Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** Particulates filter conforming to EN 143

When RPE is used a face piece Fit Test should be conducted

### Environmental exposure controls

No information available.

### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

<b>Physical State</b>	Solid
<b>Appearance</b>	White
<b>Odor</b>	Odorless
<b>Odor Threshold</b>	No information available
<b>pH</b>	No information available
<b>Melting Point/Range</b>	97 - 99 °C / 206.6 - 210.2 °F
<b>Boiling Point/Range</b>	235 °C / 455 °F @ 0.9 mmHg
<b>Flash Point</b>	No information available
<b>Evaporation Rate</b>	Not applicable
<b>Flammability (solid,gas)</b>	No information available
<b>Flammability or explosive limits</b>	
<b>Upper</b>	No data available
<b>Lower</b>	No data available
<b>Vapor Pressure</b>	No information available
<b>Vapor Density</b>	Not applicable
<b>Specific Gravity</b>	No information available
<b>Solubility</b>	slightly soluble
<b>Partition coefficient; n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	No information available
<b>Decomposition Temperature</b>	No information available
<b>Viscosity</b>	Not applicable
<b>Molecular Formula</b>	C9 H12 N3 P
<b>Molecular Weight</b>	193.19

## 10. Stability and reactivity

<b>Reactive Hazard</b>	None known, based on information available
<b>Stability</b>	Stable under normal conditions.
<b>Conditions to Avoid</b>	Incompatible products. Excess heat.
<b>Incompatible Materials</b>	Strong oxidizing agents, Acids
<b>Hazardous Decomposition Products</b>	Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Nitrogen oxides (NO <sub>x</sub> ), Oxides of phosphorus
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.
<b>Hazardous Reactions</b>	None under normal processing.

## 11. Toxicological information

### Acute Toxicity

#### Product Information

<b>Oral LD50</b>	Category 4. ATE = 300 - 2000 mg/kg.
<b>Dermal LD50</b>	Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
<b>Mist LC50</b>	Category 3. ATE = 0.5 - 1 mg/l.

#### Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Propanenitrile, 3,3,3-phosphinidynetris-	1049 mg/kg (Rat)	>2000 mg/kg (Rabbit)	Not listed
Formaldehyde	500 mg/kg (Rat)	LD50 = 270 mg/kg (Rabbit)	0.578 mg/L (Rat) 4 h
Acrylonitrile	LD50 = 193 mg/kg ( Rat )	LD50 = 63 mg/kg ( Rabbit )	LC50 = 0.47 mg/L ( Rat ) 4 h

<b>Toxicologically Synergistic</b>	No information available
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**Products****Delayed and immediate effects as well as chronic effects from short and long-term exposure****Irritation** No information available**Sensitization** No information available**Carcinogenicity** May cause cancer. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Propanenitrile, 3,3,3-phosphinidynetris-	4023-53-4	Not listed	Not listed	Not listed	Not listed	Not listed
Formaldehyde	50-00-0	Group 1	Known	A1	X	A2
Acrylonitrile	107-13-1	Group 2B	Reasonably Anticipated	A3	X	A3

*IARC (International Agency for Research on Cancer)**IARC (International Agency for Research on Cancer)**Group 1 - Carcinogenic to Humans**Group 2A - Probably Carcinogenic to Humans**Group 2B - Possibly Carcinogenic to Humans**NTP: (National Toxicity Program)**Known - Known Carcinogen**Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen**A1 - Known Human Carcinogen**A2 - Suspected Human Carcinogen**A3 - Animal Carcinogen**ACGIH: (American Conference of Governmental Industrial Hygienists)**ACGIH: (American Conference of Governmental Industrial Hygienists)**Mexico - Occupational Exposure Limits - Carcinogens**Mexico - Occupational Exposure Limits - Carcinogens**A1 - Confirmed Human Carcinogen**A2 - Suspected Human Carcinogen**A3 - Confirmed Animal Carcinogen**A4 - Not Classifiable as a Human Carcinogen**A5 - Not Suspected as a Human Carcinogen***Mutagenic Effects** No information available**Reproductive Effects** No information available.**Developmental Effects** No information available.**Teratogenicity** No information available.**STOT - single exposure** Respiratory system**STOT - repeated exposure** None known**Aspiration hazard** No information available**Symptoms / effects, both acute and delayed** No information available**Endocrine Disruptor Information** No information available**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

**Ecotoxicity**

Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Formaldehyde	Not listed	Leuciscus idus: LC50 = 15 mg/L 96h	Not listed	EC50 = 20 mg/L 96h EC50 = 2 mg/L 48h
Acrylonitrile	Not listed	LC50: 8.7 - 10 mg/L, 96h	EC50 = 254 mg/L 30 min	EC50: = 7.38 mg/L, 48h

		flow-through ( <i>Lepomis macrochirus</i> ) LC50: 28 - 39 mg/L, 96h static ( <i>Pimephales promelas</i> ) LC50: = 18.07 mg/L, 96h semi-static ( <i>Cyprinus carpio</i> ) LC50: = 24 mg/L, 96h ( <i>Oncorhynchus mykiss</i> ) LC50: = 25 mg/L, 96h flow-through ( <i>Brachydanio rerio</i> ) LC50: = 33.5 mg/L, 96h static ( <i>Poecilia reticulata</i> ) LC50: 6.7 - 15 mg/L, 96h flow-through ( <i>Pimephales promelas</i> ) LC50: 8.0 - 12.0 mg/L, 96h static ( <i>Lepomis macrochirus</i> )	EC50 = 367 mg/L 15 min EC50 = 495 mg/L 5 min EC50 = 6 mg/L 24 h	( <i>Daphnia magna</i> )
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**Persistence and Degradability** May persist based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Formaldehyde	-0.35
Acrylonitrile	-0.92

### 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Formaldehyde - 50-00-0	U122	-
Acrylonitrile - 107-13-1	U009	-

### 14. Transport information

#### DOT

**UN-No** UN3464  
**Proper Shipping Name** consumer commodity ORGANOPHOSPHORUS COMPOUND, SOLID, TOXIC, N.O.S.  
**Technical Name** Propanenitrile, 3,3',3"-phosphinidynetris-, Acrylonitrile  
**Hazard Class** 6.1  
**Packing Group** II

#### TDG

**UN-No** UN3464  
**Proper Shipping Name** Organophosphorus Compound, toxic, solid, n.o.s.  
**Hazard Class** 6.1  
**Packing Group** II

#### IATA

**UN-No** UN3464  
**Proper Shipping Name** ORGANOPHOSPHORUS COMPOUND, SOLID, TOXIC, N.O.S.  
**Hazard Class** 6.1  
**Packing Group** II

#### IMDG/IMO

**UN-No** UN3464  
**Proper Shipping Name** ORGANOPHOSPHORUS COMPOUND, SOLID, TOXIC, N.O.S.  
**Hazard Class** 6.1  
**Packing Group** II

## 15. Regulatory information

## International Inventories

Component	CAS-No	DSL	NDSL	TSCA	TSCA Inventory notification - Active-Inactive	EINECS	ELINCS	NLP
Propanenitrile, 3,3,3-phosphinidynetris-	4023-53-4	-	X	X	ACTIVE	223-687-0	-	-
Formaldehyde	50-00-0	X	-	X	ACTIVE	200-001-8	-	-
Acrylonitrile	107-13-1	X	-	X	ACTIVE	203-466-5	-	-

Component	CAS-No	IECSC	KECL	ENCS	ISHL	TCSI	AICS	NZIoC	PICCS
Propanenitrile, 3,3,3-phosphinidynetris-	4023-53-4	X	-	-	X	X	-	-	-
Formaldehyde	50-00-0	X	KE-17074	X	X	X	X	X	X
Acrylonitrile	107-13-1	X	KE-29393	X	X	X	X	X	X

## Legend:

X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

## Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Formaldehyde	Part 1, Group A Substance Part 5, Individual Substances Part 4 Substance	Schedule I	
Acrylonitrile	Part 1, Group B Substance Part 1, Group A Substance Part 4 Substance	Schedule I	

## Legend

NPRI - National Pollutant Release Inventory

## Other International Regulations

## Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Formaldehyde	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-
Acrylonitrile	-	Use restricted. See item 28. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-



<https://echa.europa.eu/substances-restricted-under-reach>

#### Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS-No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Propanenitrile, 3,3,3-phosphinidynetris-	4023-53-4	Not applicable	Not applicable	Not applicable	Not applicable
Formaldehyde	50-00-0	Listed	Not applicable	Not applicable	Not applicable
Acrylonitrile	107-13-1	Listed	Not applicable	Not applicable	Not applicable

Component	CAS-No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Propanenitrile, 3,3,3-phosphinidynetris-	4023-53-4	Not applicable	Not applicable	Not applicable	Not applicable
Formaldehyde	50-00-0	5 tonne	50 tonne	Not applicable	Not applicable
Acrylonitrile	107-13-1	Not applicable	Not applicable	Not applicable	Not applicable

## 16. Other information

<b>Prepared By</b>	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
<b>Creation Date</b>	02-October-2012
<b>Revision Date</b>	28-December-2021
<b>Print Date</b>	28-December-2021
<b>Revision Summary</b>	This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

#### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**